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New ICN utilizations

Why would Legislators want to look at new utilization of the Network?

Since the time the Iowa Communications Network (ICN) was constructed in the early 1990s, a massive worldwide shift in telecommunications has taken place. The United States' population is increasingly mobile and technologies are being developed to provide capabilities for services to be delivered anywhere, anytime, at almost any speed of travel. The Internet has made it possible to access just about everything that is web-based (including video) where ever wired and wireless broadband capabilities are available. Distance learning and other types of training can be accessed in the workplace, the home, libraries, and coffee shops. Even the Department of Transportation (DOT) has allowed Wi-Fi capabilities in selected rest areas along the Interstate to be installed by a vendor. These services have proven to be very popular and are entirely advertiser supported. These massive shifts in the way we communicate are being borne out by the next generation, many of whom are completely untethered from any wires.

What does the landscape look like right now?

The concept of high-speed Internet as a "public good" is being actively debated and there are strong positions on both sides of the discussion. Telecommunications first emerged in the United States as a highly-regulated monopoly service based on copper wires. Interesting competitors have emerged with the arrival of cable television and cellular telephones, but many rural areas and urban neighborhoods continue to struggle to get competitive services equivalent to their neighbors. The debates over what is next ranges from the concept of "net neutrality" to the next generation of Universal Service. The result of this debate will ultimately impact the viability and future of the State's investment in the ICN.

What type of utilization could be considered?

Today the ICN's customer base is severely limited. Authorized customers include education, state and federal agencies, telemedicine facilities, and public libraries. Changing this structure could accomplish policy objectives, but such changes would be controversial. The ICN distributes broadband Internet services to its customer base and demand for these services is growing at a rapid pace. The ICN is contacted regularly by private sector entities interested in connecting to the Network for services.

What are the emerging trends the ICN is developing services for?

The users of the ICN currently access the Network for limited applications of Video over Internet Protocol (VoIP, not to be confused with Voice over Internet Protocol which uses the same acronym). The ICN is in the process of developing scheduling and technical support capabilities its customers are beginning to request. The ICN is also researching opportunities for educational customers to more affordably share curriculum enhancements like United Streaming's video content and other licensed products. Currently, these Internet based applications can only be provided to higher education, K -12 school districts, public libraries, telemedicine providers and state and federal government agencies because of ICN customer limitations.

Infrastructure requirements for the network and new utilizations

Has the ICN been upgrading its infrastructure?

During the early part of this decade, the State invested in the ATM upgrade which has provided a redundant architecture (permits alternative pathways in case of fiber cuts or equipment failure) and video technology requiring less bandwidth. The agency is in the process of upgrading the voice equipment on the Capitol Complex including phones. A portion of the equipment appropriation received from the State in FY 06 and 07 is funding this six-year project. Funding has been requested for FY08 to continue the Capitol Complex work.

Will upgrades to the ICN infrastructure be required to deliver Video over IP and other bandwidth intensive services?

The ICN infrastructure currently has the capacity to carry these applications. ICN has partnered with the Regent institutions and has acquired very high-speed, redundant Internet access points for these services. Some potential ICN users connect to Internet services provided by other telecommunications companies, but access content services from the ICN backbone (referred to as 'last mile connections'). There is no accurate method for the ICN to determine if these last mile connections will affordably meet the capacity requirements of those users today or into the future.

Many K-12 districts currently receive their broadband access from their Area Education Agency (AEA). AEAs purchase aggregated broadband access from the ICN and distribute the capacity to the local schools. As the requirements for broadband expansion increase, this distribution system could be reconfigured to enhance these capabilities, with the consent of the legislature.

What policies are being considered by governmental entities to ensure demographic and logistical differences don't impact affordable broadband access?

A number of entities including the Communications Workers of America, Washington DC, the Brookings Institute, and Verizon, among others, have cited the need to ensure that broadband capabilities are available nationwide. Several governmental bodies are providing broadband capabilities to specific areas often in partnership with private companies.

- **Kentucky:** *ConnectKentucky* indicates that over 80 percent of their residents have access to broadband in their homes and all will have access by the end of this calendar year.
- **Utah:** Utopia, the Utah Telecommunication Open Infrastructure Agency, provides fiber to the premise to customers in 14 northeastern Utah cities.
- **San Francisco, CA:** In a study published in January 2007, feasibility of city ownership of a 21st Century fiber network was analyzed. The Report recommended a market-friendly model in which San Francisco enables multiple communication companies to compete over a City fiber infrastructure that would reduce barriers to entry. The Report also integrates a fiber networking strategy for public safety, public health, educational, and other government use. Fiber deployment for internal City use represents an essential next step in government service. The City fiber network would serve as a backbone for networking to the community.
- **Palo Alto, CA:** The City of Palo Alto Utilities (CPAU) has provided dark fiber connectivity to businesses in Palo Alto since 2000. In addition, CPAU conducted a technical fiber to the premise (FTTP) pilot for over 48 months. The city has initiated efforts to encourage a private provider to build the FTTP facilities.
- **Seattle, WA:** Seattle is evaluating the feasibility of a public/private partnership to reduce the city's risk of owning a network.
- **Portland, OR:** Portland has a city wireless network in place and is looking into constructing a complementary fiber network.
- **Jackson, TN:** Jackson Energy Authority has implemented a hybrid of retail and open access business model with their fiber network. Ninety-six cable television services are provided directly by Jackson Energy while telephone and Internet services are directly available from other providers. Jackson Energy has also added other vertical services such as remote data backup and other Information Technology (IT) services.
- **Reedsburg, WI:** Reedsburg Utility Commission is a leader in municipal broadband offerings. Reedsburg was one of the first FTTP deployments in the country. Reedsburg was an earlier adopter of FTTP.

Reporting on nationwide network activity, MuniWireless states as of December 2006, there are 79 region and citywide wireless networks, 48 city hotzones, 36 public safety and municipal use only networks, 149 city and countywide projects where RFIs or RFPs have been issued or deployed, and 40 cities/counties considering W-Fi. This total of 312 city or regional wireless networks that are deployed or in progress compares with only 122 networks deployed or in progress in July 2005.

See Appendix A for examples of other public or public/private partnership networks.

Increase revenue stream through collaborations

Why does the ICN still request appropriations from the State?

Some investments in the infrastructure have been made to replace major components of 'end of life' network functionality. The ICN has made investments it was capable of with the minimal cash flow generated from operations on a priority basis. During the past two years, the State has invested approximately \$2.0 million annually in Capitol Complex telephone infrastructure and equipment needed to respond to the increased Internet traffic carried by the ICN. However, this has not been sufficient for the Network to replace all of the equipment that has reached the end of its useful life. There is a backlog of major maintenance requiring funding of approximately \$14 million.

The state appropriation investment allows the State to receive Universal Service Fund monies on behalf of schools and libraries in accordance with the Code of Federal Regulations. Historically, ICN appropriations, including the appropriations to repay the network's Certificates of Participation, have been identified as state support and were applied against the price of the video service provided to K-12 schools and libraries. This request is in keeping with this precedent and the State would be eligible for E-rate discounts up to \$1,932,964 during FY 2008.

Why can't the ICN generate additional revenue to meet capital investment requirements?

The definition of an ICN "authorized user" in the *Code of Iowa* limits the customer base, which restricts the support that the Network can provide. For example, cities and counties, Iowa businesses, and other members of the telecommunications industry are not authorized users. The restrictions on the authorized users limit the opportunities to identify and pursue new sources of revenue.

By statute, the ICN is unable to lease or sell excess capacity to telecommunications businesses or others wanting services. From time to time, the ICN is contacted by private sector companies for services. Additionally, the Code requires the State to lease the connections to schools and libraries even though owning the fiber, in some cases, would be more cost-effective.

Can private companies lease capacity from the ICN to lower the cost of delivering broadband to the home?

The *Code of Iowa* prohibits the Network from providing services to entities that are not authorized users. In addition, the administrative code restricts end-users from allowing any non-authorized user from accessing network services.

What type of partnership or collaborations could be enacted to benefit Iowans, businesses, and the state?

The ICN has the technical capabilities to deliver affordable broadband access statewide and by collaborating with private businesses could ensure Iowans could have access to broadband capabilities at home, school, medical facilities, and at their place of work. Statutory changes would enable businesses to utilize broadband for research, access to needed data and training opportunities. Following are the current statutory and funding constraints that limit the level of service the Network can provide to providers to ensure adequate capacity to deliver affordable, broadband last mile connections.

- The definition of an "authorized user" limits the customer base which restricts the support that the Network could provide to cities and counties, Iowa businesses, and other members of the telecommunications industry.
- The current videoconferencing services offered by the ICN have limited access points either because of the limitations of Part III requirements for educational institutions, technical, or lack of funding to acquire the necessary connectivity by schools. Businesses are not authorized to use the ICN.
- The current spending limitation of \$1 million without legislative approval related to services for telecommunications impedes the ability to make necessary capital investments. This level of spending oversight may have been necessary when the ICN received General Fund appropriations and during the early days of the network, but is an impediment in today's inflation adjusted environment. (See SSB 1176)
- Funding disincentives between classes that are shared physically versus those that are shared using ICN video services. (See SSB 1083 and HSB 69.)

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